

WATER-RELATED INCIDENTS IN MARICOPA COUNTY, 2002

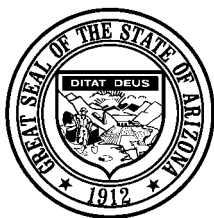
A Report to the Drowning Prevention Coalition of Central Arizona



**Arizona Department of Health Services
Bureau of Public Health Statistics**

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Janet Napolitano, Governor
State of Arizona

Catherine R. Eden, Director
Arizona Department of Health Services

contact person:

Timothy J. Flood, M.D.
Arizona Department of Health Services
Bureau of Public Health Statistics
150 N Eighteenth Avenue, Rm 550
Phoenix, Arizona 85007-3248

(602) 542-7333

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WATER-RELATED INCIDENTS IN MARICOPA COUNTY, 2002

SUMMARY

This report describes water-related incidents that have activated the 9-1-1 emergency system. Data in this report are derived from case reports submitted by firefighters and fire departments in the Phoenix metropolitan area. In 2002 there were 104 serious water-related incidents that occurred in the metro area among persons of all ages. Children 0-4 years of age accounted for 66 of these incidents, 55 of which occurred in swimming pools. Of the 66 young children, 20 are known to have died (14 due to an incident occurring in a pool). Most of the remaining children survived the incident without apparent medical complications. Although there has been a 32% increase in children living in the area in the 1990's, the number of incidents in swimming pools has remained relatively unchanged since 1990.

We believe that prevention efforts have suppressed the number of incidents over the past ten years. Similarly, the Maricopa drowning death rate for children 0-4 years of age in 2002 reached 6.9 deaths per 100,000 children, the second lowest rate since 1984.

A remarkable finding in the attributed causes of pool incidents, 1996-2002, shows that an absent or inadequate barrier as opposed to lack of supervision is most commonly noted in incidents in which the child dies. Lack of supervision is more prevalent in incidents in which the child has a presumed normal outcome. Emphasis on issues related to supervision will have the greatest impact on nonfatal incidents, especially in the summertime. However, to prevent child drowning deaths (in contrast to incidents in which the child survives intact), increased attention needs to be paid to barriers and their maintenance.

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INTRODUCTION

In the mid-1980's the drowning death rate of Arizona's preschoolers ranked first in the nation.¹ Warm weather, long summers, and the presence of about 300,000 residential swimming pools make Arizona prone to water-related incidents. Furthermore, death is just one outcome of water-related incidents: in about 9% of incidents the child survives, albeit with some degree of neurological impairment.²

In order to address the problem of water-related incidents in the Phoenix metropolitan area (which is called "Maricopa County" in this report), the Drowning Prevention Coalition of Central Arizona was formed in 1988. This Coalition is comprised of municipal fire departments, hospitals, the state and county health departments, community organizations, pool builders, suppliers of pool safety equipment, parents of drowning victims, and others. The ADHS has issued a report of the collected data annually since 1990.

The following report presents the data collected for 2002, and compares the findings to those in previous years. Much of the report focuses on children under five years of age, specifically on incidents occurring in swimming pools.

METHODS AND DATA SOURCE

Case Definition: In this report a water-related incident is defined as an incident in which a fire department responded to a 9-1-1 emergency call. Included in the analysis is any incident in which the victim was given CPR, was not breathing, and was submerged or not struggling when retrieved from the water. (Some of these cases die the same day or at a later time; some fully recover.) Excluded from analysis is any incident that did not appear to be life-threatening. For example, an incident in which a victim was struggling and did not require CPR is excluded from analysis.³

¹ Arizona Department of Health Services. Unintentional Drowning Deaths, Arizona, 1980-1989. Office of Planning & Health Status Monitoring, October 1990.

² Beyda, D. and Masuello, J. Phoenix Children's Hospital. Oral communication, July 1999.

³ These relatively minor 9-1-1 incidents that were excluded sometimes are called "dunkings, close calls, or near misses." In 1999 there were 31 such cases, in 2000 there were 22, in 2001 there were 54, and in 2002 there were 27 excluded incidents. ADHS requests that fire departments submit all such incidents. Drowning prevention coordinators at most fire departments withhold the submission of obviously trivial incidents.

Procedures: Since 1988, the Arizona Department of Health Services (ADHS) has coordinated a surveillance system to monitor water-related reports from fire departments. The fire departments usually are first on the scene of 9-1-1 calls and are able to provide information about the event. Very few incidents occur without activation of 9-1-1. The fire departments submit reports of water-related incidents on a standard form (see Appendix) developed in conjunction with the Coalition. The reported data items include the age and gender of the victim, the location, and the apparent circumstances surrounding the event. The ADHS Bureau of Public Health Statistics receives and analyzes these case forms.

For consistency, one person (S.R.) at ADHS receives and codes the forms of each reported incident. A second person (T.J.F.) reviews the data entries of each record. Usually, fewer than six incidents per year are questionable as to whether the incident was life-threatening. Calls to 9-1-1 that are canceled are not submitted to ADHS. The data reported herein generally include relatively few calls to the Maricopa County Sheriff's Office, which responds to incidents on the surrounding lakes, the Salt River, or the Verde River; these are popular recreational areas located just outside of the Phoenix metropolitan area.

The surveillance system relies upon fire departments to completely and accurately report the cases occurring within their jurisdictions.

Validation: When producing the reports for 1997 and 1998, inquiry was made to two pediatric critical care facilities (Phoenix Children's Hospital and Saint Joseph's Hospital) to assess the accuracy of the surveillance system. Surprisingly, we found that the fire departments under-reported 13 incidents in 1997, and 7 incidents in 1998. These incidents were added to the database and analyzed in the annual reports for the respective years. However, similar checks with the hospitals have not occurred in 1999, 2000, 2001, or 2002. Also noteworthy, in 1999 the Phoenix Fire Department designated one person to be chiefly responsible for reporting water-related incidents. This step probably has resulted in more complete reporting from Phoenix beginning in 1999. Those steps are mentioned because they affect the accuracy and consistency of the data in this report.

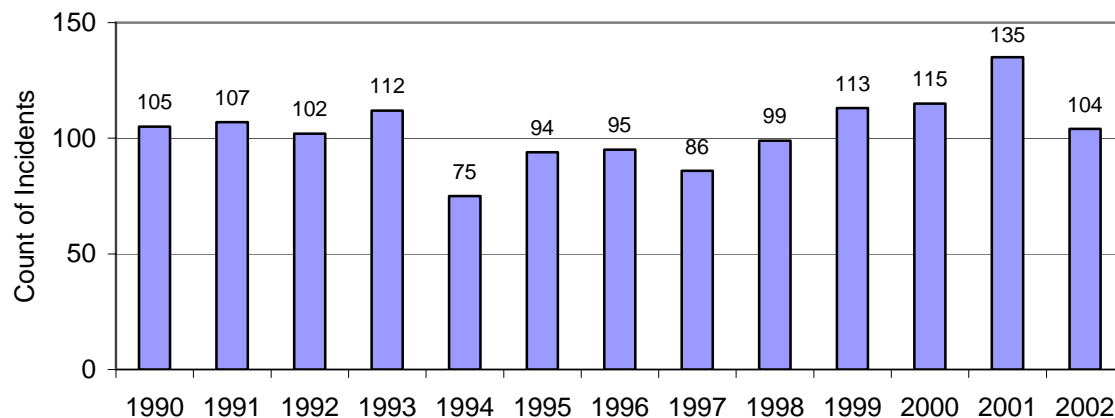
Newspaper reports of incidents are searched for daily, clipped when found, and attached to the fire department reports. Rarely, there is no associated fire department report. If a fire department report is missing, then ADHS contacts the fire department to request a submission.

Analysis was performed using Microsoft Access on the database of the 1,913 records entered since 1988. The minor (non life-threatening) incidents are excluded from all subsequent analyses reported herein.

FINDINGS

In 2002, fire departments reported 104 serious water-related incidents in Maricopa County among persons of all ages. The count of incidents in 2002 was similar to the counts reported in previous years (see **Figure A**).

Figure A. Count of serious water-related incidents among persons of all ages in all bodies of water. An incident may lead to an outcome of "death" or survival with "no impairment."



The distribution of the 104 incidents in 2002 according to the city and age of the victim is shown in **Table 1**.

Table 1. Water-related incidents in 2002 according to age group and city of incident in Maricopa County. Only life threatening incidents are included in the analysis.

City of Incident	Years of Age of the Victim						Total
	0-4	5-14	15-34	35-64	65+	Unknown	
Apache Junction	0	0	0	1	0	0	1
Avondale	0	0	0	0	0	0	0
Chandler	3	0	0	0	1	0	4
Gilbert	5	1	0	0	0	0	6
Glendale	8	2	1	0	0	0	11
Goodyear	0	1	0	0	0	0	1
Mesa	11	0	1	3	0	0	15
Peoria	2	0	2	2	0	0	6
Phoenix	31	4	8	6	3	0	52
rural area	2	0	0	0	0	0	2
Scottsdale	2	0	0	0	0	1	2
Surprise	1	0	0	0	0	0	1
Tempe	1	0	0	0	1	0	2
Other & Unknown	0	0	0	0	0	0	0
All Areas	66	8	12	12	5	1	104

The body of water of the incidents is presented according to age group in **Table 2**. Most incidents took place in pools. Pools, either above ground or in ground, were involved in 80 (76.9%) of the 104 events. Fifty-five of the 80 incidents in pools involved children aged 0-4 years. Bathtubs (8 incidents) and rivers and lakes (6 incidents) were the next most common places for water-related incidents among all ages. Seven preschoolers were trapped in bathtubs in 2002 (six of these incidents resulted in death). For all age groups, other bodies of water in which incidents occurred included canal/irrigation ditches (5), spas (3), a bucket (1), and a fish or decorative pond (1).

Table 2. Water type by age group, 2002. Only life threatening incidents are shown.

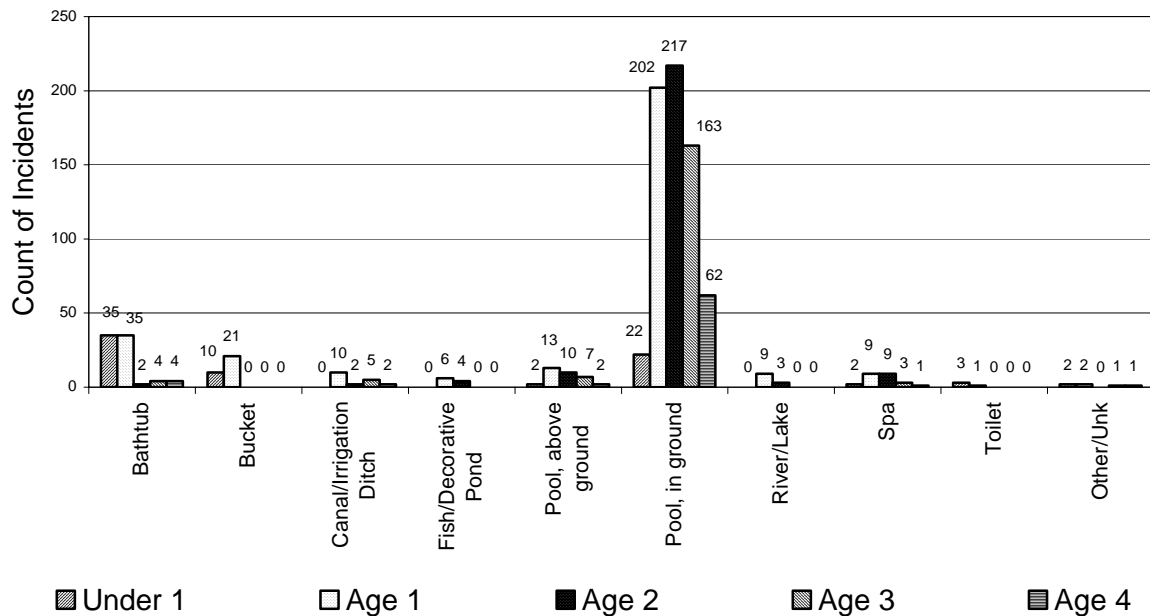
Body of Water	Years of Age of the Victim						Total
	0-4	5-14	15-34	35-64	65+	Unknown	
Bathtub	7	1	0	0	0	0	8
Bucket	1	0	0	0	0	0	1
Canal or Irrigation Ditch	0	0	2	3	0	0	5
Fish or Decorative Pond	1	0	0	0	0	0	1
Pool, above ground	2	0	0	0	0	0	2
Pool, in ground	53	7	7	7	4	0	78
River or Lake	1	0	3	2	0	0	6
Spa	1	0	0	0	1	1	3
Other or Unknown	0	0	0	0	0	0	0
All water bodies	66	8	12	12	5	1	104

Young Children

Children, ages 0-4 years, comprised the largest group experiencing a water-related incident. Although older individuals are equally important to consider in terms of loss of life, society generally feels a greater sense of responsibility to prevent injury to persons in the youngest, highly vulnerable, age group. The remainder of this report analyzes the findings among the 0-4 year old age group.

The distribution of cases among single ages of the 0-4 year old group is shown in **Figure 1**. Among children 1-4 years old, the predominant number of incidents occur in swimming pools. Among infants under one year of age, bathtubs are the most common water body in which incidents occur.

Figure 1. Count of incidents according to the body of water in which life threatening incidents occurred, by single age category, reported in Maricopa County, 1990-2002.



Because most incidents for this age group occurred in pools, many of the following tables and figures are restricted to incidents occurring in swimming pools.

Figure 2 shows the number of pool-related incidents reported over the last 14 years. In 2002, the number of pool incidents (55) barely changed compared to previous years. However, it is important to consider that the number of children who reside in the metro area increases every year. The calculated rate of pool incidents, expressed per 100,000 children who reside in Maricopa County, is shown in **Figure 3**. A calculation of the inverse of the rate in 2002 ($100000 / 21.2$) reveals that for every 4,717 children, one child experienced a life-threatening pool incident.

Figure 2. Count of life-threatening pool incidents, by year, among 0-4 year olds.

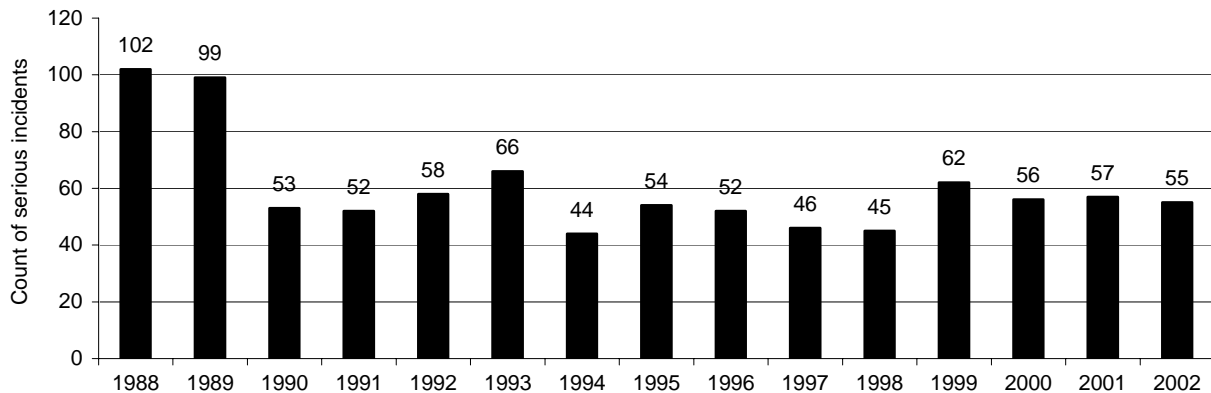


Figure 3. Rate (per 100,000 children aged 0-4) of life threatening pool incidents occurring in Maricopa County. The rates consider the increasing population of children in the county. The numerators for the rates are the counts of incidents (shown above) without regard to the county in which the child resided.

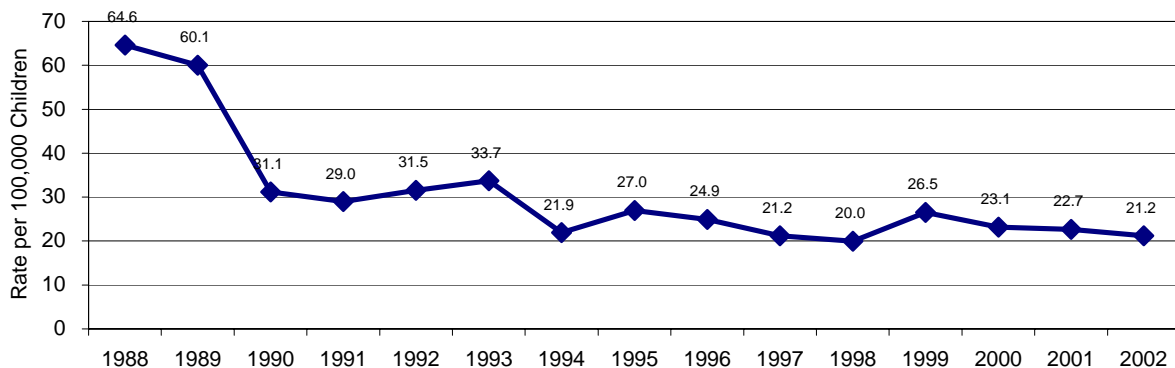
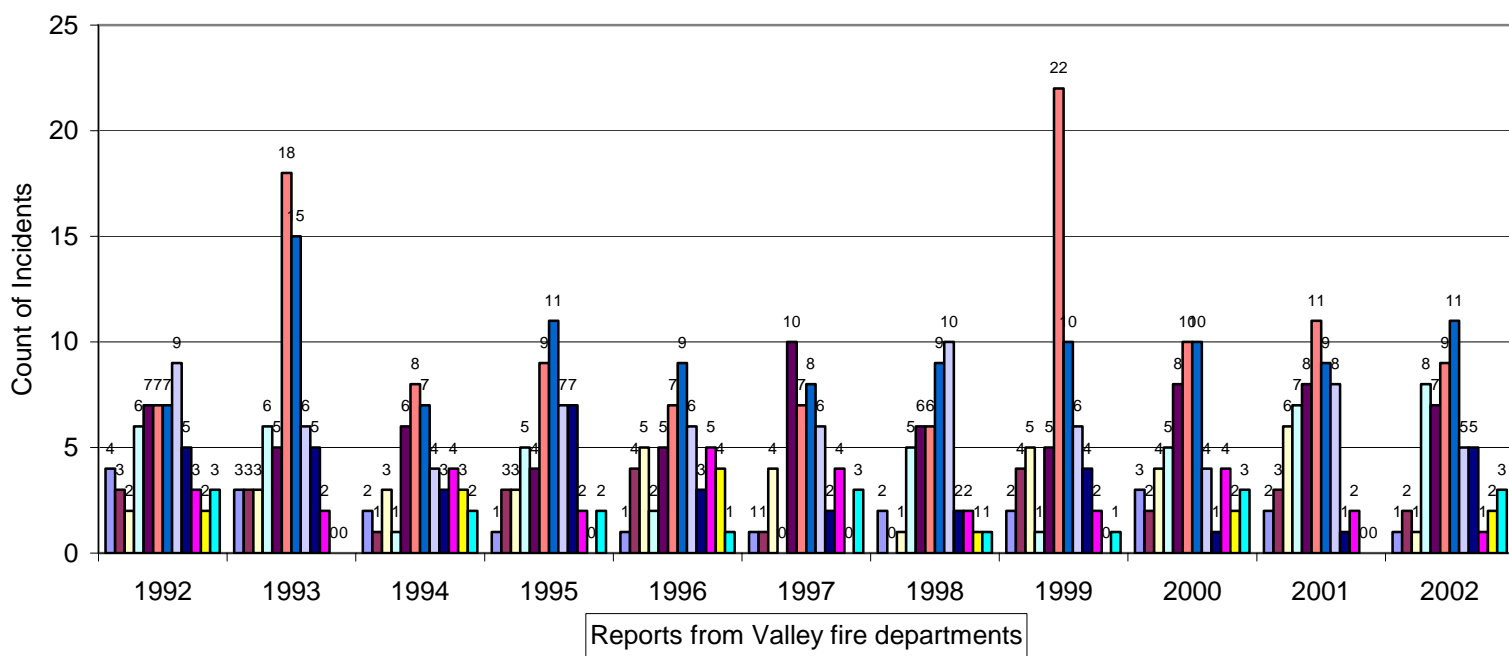


Figure 4 displays the occurrence of cases by month. The dramatic spike in incidents that occurred in June of 1999 has not been repeated. Rather, we note the typical pattern seen in previous years, with the number of pool-related incidents peaking during the summer months of June, July, and August. In 2002 we did not hold the count under a short-term goal of fewer than 10 incidents every month.

Figure 4. Count of life threatening swimming pool incidents, 0-4 year olds, Maricopa County.



As shown in **Table 3**, the majority of the young, pool-related victims in 2002 were male (56%). This is a decrease from the 2000 and 2001 values of 67% and 61% male victims in this 0-4 year old group.

Table 3. Gender of 55 children, 0-4 years old, involved in pool-related incidents, 2002

Gender	Number	(%)
Male	31	56%
Female	24	44%

Race and ethnicity have been difficult variables to analyze because of the way that Hispanic ethnicity is variably treated as a race group. This pattern is similar to the reporting practices in previous years. We make the assumption here that Whites, unless the report from the firefighter specified otherwise, are non Hispanic. For purposes of analysis we count “Hispanic” by dropping any indicated race. A tabulation of the available data is presented in **Table 4**.

The 2000 Census indicates that 40.1% of children age 0-4 residing in Maricopa County are Hispanic.⁴ The proportion of Hispanic families that actually have pools is not known, but is probably less than the population as a whole.

Table 4. Race and ethnic characteristics of children, 0-4 years of age, involved in water-related incidents in pools in 2002.

Race/Ethnicity	Number	%
Asian	0	0.0%
Amer Indian	0	0.0%
Black	3	5.5%
Hispanic	16	29.1%
White, non Hispanic	34	61.8%
Other	0	0.0%
Unknown	2	3.6%
TOTAL	55	100.0%

⁴ To calculate the percentage of Hispanic children in Maricopa County, the numerator was derived from the U.S. Census Bureau at <http://factfinder.census.gov/> and the denominator was derived from the Arizona Department of Economic Security’s Population Statistics at <http://www.de.state.az.us/>

Table 5 presents the incidents according to the body of water and the site of the 66 incidents involving children between the ages of 0 and 4. The most common site of incidence was a pool located at the victim's home (35 incidents). Nine pool incidents occurred at a relative's home. Four incidents occurred in the pool at a friend's home. Three incidents occurred in non nonresidential settings, and two each occurred at a neighbor's or public/semipublic pool setting. All seven bathtub incidents occurred at the victim's home. There were no canal or toilet incidents among 0-4 year olds in Maricopa County in 2002.

Table 5. The body of water according to the site of incident for children, 0-4 years of age. Life-threatening incidents only, Maricopa County, 2002.

Body of Water	Friend's Home	Neighbor's Home	Other	Public/ Semi-pub	Relative's Home	Victim's Home	All Sites
Bathtub						7	7
Bucket						1	1
Canal/Irrigation Ditch							
Fish/Decorative Pond					1		1
Pool, above ground					1	1	2
Pool, in ground	4	2	3	2	8	34	53
River/Lake	1						1
Spa						1	1
Toilet							
Other/Unknown							
TOTAL	5	2	3	2	10	44	66

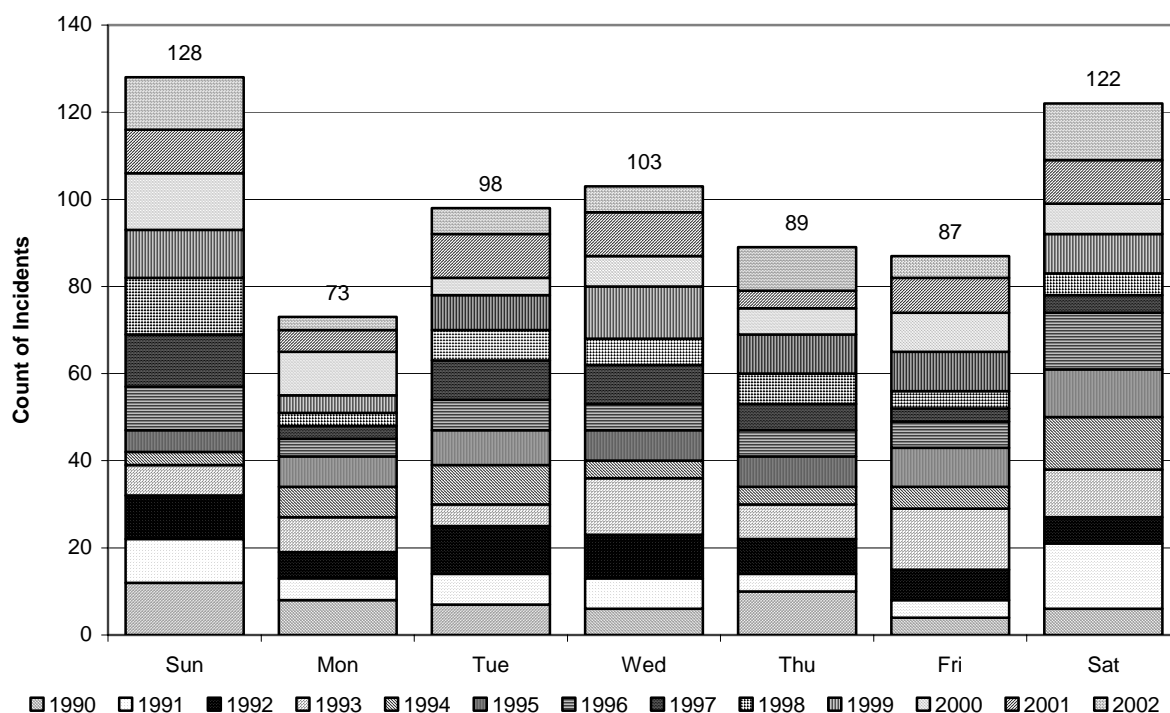
Table 6 presents the type of dwelling where the incidents took place. Forty-seven of the 55 pool incidents occurred at a single family home. Six (11%) of the 55 pool incidents occurred in apartments or condominiums in 2002. In past years, apartments were the location of most bathtub incidents. In 2002, apartments had three, and single homes had four, life-threatening bathtub incidents involving 0-4 year old children.

Table 6. The body of water according to the type of dwelling for children, 0-4 years of age, who experienced a water-related incident in 2002.

Body of Water	Apt/ Condo	Hotel/ Motel	Single Home	Multiple Units	Trailer/ Mobile	Unk./ Other/NA	Total
Bathtub	3		4				7
Bucket	1						1
Canal/Irrigation Ditch							0
Fish/Decorative Pond			1				1
Pool, above ground			2				2
Pool, in ground	6	1	45			1	53
River/Lake			1				1
Spa			1				1
Toilet							0
Other/Unknown							0
Total	10	1	54	0	0	1	66

Figure 5 displays the occurrence of pool-related incidents by day of week. The most common day of occurrence varies from year to year. Incidents occurred on every day of the week. There was no day when vigilance would not have been important. The graph shows that pool incidents tend to occur more often during the weekend.

Figure 5. Day of the week of life-threatening pool incidents among children 0-4 years old, Maricopa County, 1990-2002.



The distribution of pool incidents by hour of the day is shown in **Figure 6**. Not surprisingly, the incidents occurred when children were likely to be awake. The peak time for an incident in the 0-4 year old age group was in the mid-afternoon.

Figure 6. Life threatening pool-related incidents by hour of the day among children 0-4 years of age. Cumulative count, 1990-2002, Maricopa County.

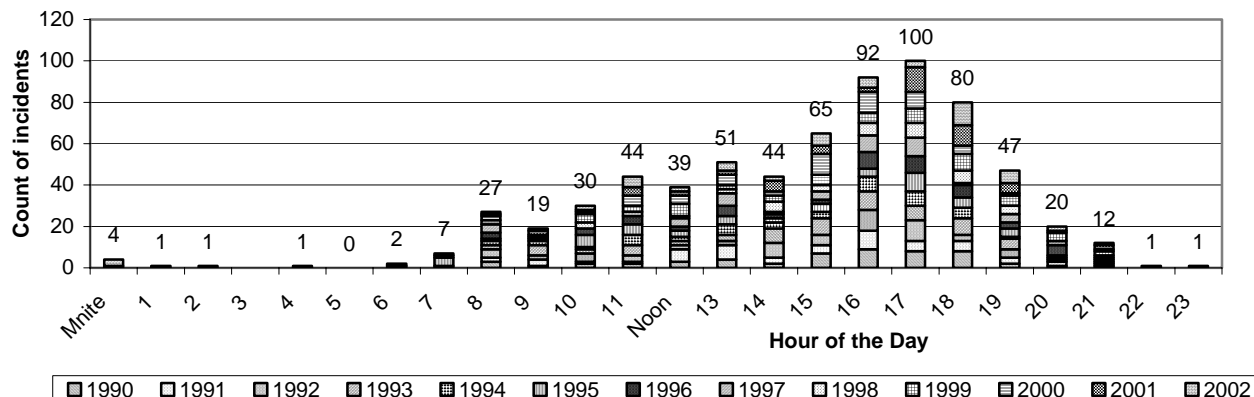


Table 7 presents information about the type of clothing worn at the time of a pool-related incident. In 54% of the cases, the children were not wearing swimming attire. These incidents did not occur in a swimming situation, but rather occurred at a time when the children were not expected to be in or near the pool.

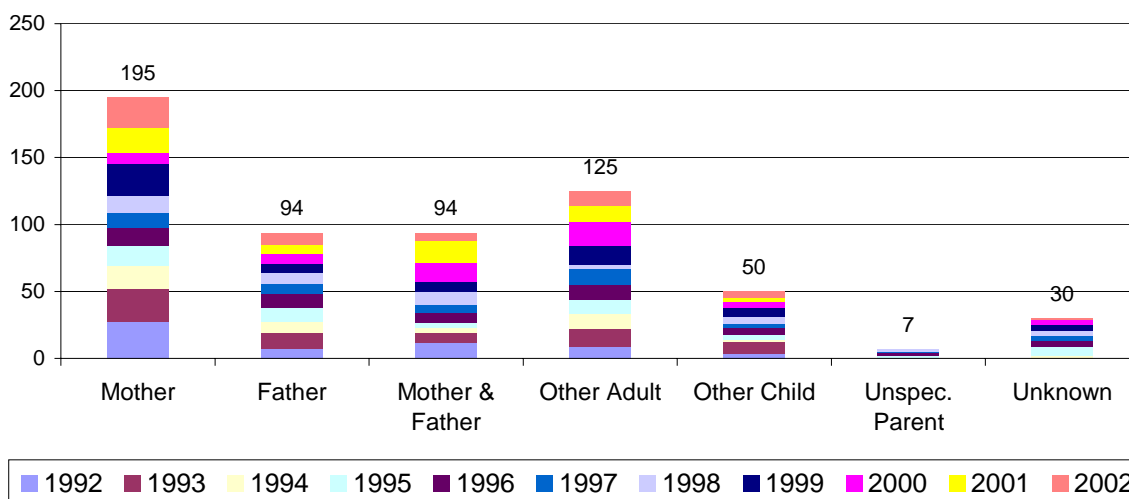
Table 7. Clothing worn by children ages 0-4 who experienced a life threatening water related incident in a pool, 2002.

Clothing	Number	%
None	1	1.8%
Swimwear	23	41.8%
Other clothes	30	54.5%
Unknown	1	1.8%
Total	55	100.0%

A major purpose of this surveillance system is the identification of the factors surrounding water-related incidents in young children. To assist in this effort, the personnel from the responding fire departments attempt to determine the apparent circumstances surrounding each event. To gather this data, a firefighter asks about supervision at the time of the incident and looks for pool barriers that could prevent entry by young children.

Information about the supervisor of the victim at the time of incident is shown in **Figure 7**. Over the past eleven years, a mother or father or both was supervising the child in 390 (65.5%) of the 595 life-threatening incidents involving children 0-4 years old. In 205 (34.4%) incidents, the supervisor was someone other than the child's parent. This seems to be higher than the amount of time that children in this young age group spend outside the direct supervision of a parent. Thus, babysitters and other supervisors also need to be alert to the potential for a pool-related incident to occur.

Figure 7. Cumulative count of life-threatening pool incidents according to the person presumed to be supervising the child, 0-4 years of age, 1992-2002



Outcomes

The fire departments have learned that at least 20 of the 66 young children (0-4 years old) who experienced a serious water-related incident in 2002 have died (see **Table 8**). Fourteen children died from an incident in a pool and six died from incidents in bathtubs. Of the 66 children, 32 had no reported impairment when released from the

hospital. There was one documented case of neurological impairment in this age group in 2002. The outcome status of 13 children was not ascertained. Since firefighters try to obtain the follow-up status on cases which have not responded to their resuscitative efforts, we speculate that in many cases a follow-up status of “unknown” means that the child probably recovered well. Currently, we are working with legal counsel to continue to obtain the outcome status from the hospitals.

Table 8. Outcome status of children reported as having a life-threatening water related incident in 2002.

Water type	Outcome Status				
	Unknown	Died	Impairment	No Impairment	Total
Bathtub		6	1		7
Bucket				1	1
Fish/Decorative Pond				1	1
Pool, above ground				2	2
Pool, in ground	11	14		28	53
River/Lake	1				1
Spa	1				1
Total	13	20	1	32	66

The narrative section of the incident report form often provides additional information concerning the incident. This narrative section reveals that a family member or other person often resuscitated the child at the scene by promptly administering CPR when the child was pulled from the water source. This rapid action appears to be a vital step in stabilizing the child and counteracting the detrimental effects of the submersion. However, we cannot determine whether prompt CPR leads to the survival in a vegetative state of some children who otherwise would have died.

Attributed Cause

Upon review of the incident form, we assign a single, “attributed cause” of each pool incident to one of the following categories:

- No barrier to pool
- Inadequate fence
- Gate or latch failed or was propped open
- Back safety door or latch failed
- Supervision issue
- Other or unknown.

The attributed causes of pool incidents during the combined years of 1996 through 2002 is shown in **Figure 8**. This information is further classified into events that occurred during “cold” months and “warm” months. The seven “cold” months are defined as October through April, and the five “warm” months are May through September.

Figure 8 reveals that during the cold months, an absence of a barrier to the pool was the leading cause of water-related incidents. During the warm months, a lack or lapse in direct supervision was the leading cause. Also, the proportion of incidents attributed to gate or latch failure is concerning. These are incidents in which the latch to the gate failed, or more commonly, in which the gate was propped open. Maintaining the integrity of the gate is an important step in preventing drowning and near-drowning incidents.

Figure 8. Attributed cause (count and percent) of drowning or near-drowning incidents in pools among children, 0-4 years old, Maricopa County, 1996-2002. All outcomes (alive, impaired, died, and unknown) are included in these charts.

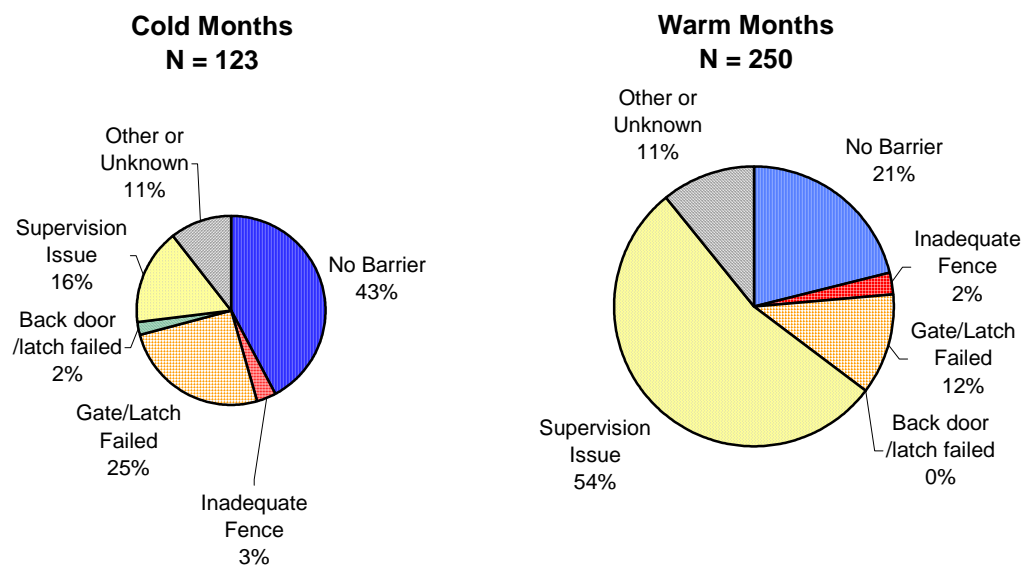
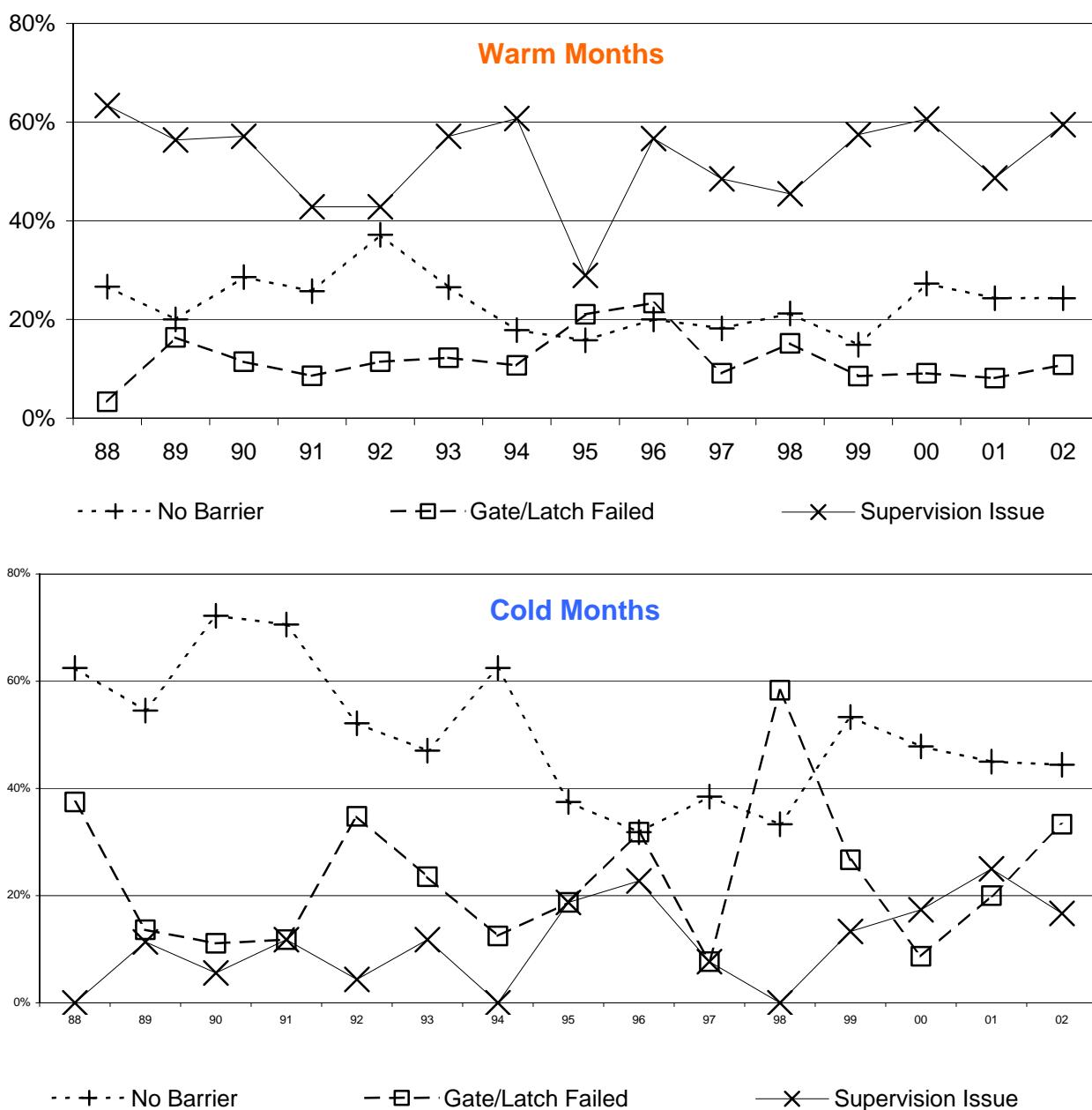


Figure 9 also presents data on the attributed cause of pool-related incidents over the 15 year period. These charts search for trends. We see that the data swing widely from year-to-year and the charts suggest no clear trend. That is to say, the data does not demonstrate a clear shift in the proportion of any of these three attributed causes of pool incidents.

Figure 9. Trend of attributed causes (expressed as the proportion of all cases in the warm and cold season) of pool incidents in Maricopa County involving children 0-4 years of age. Data within a given season will not add to 100% because we do not display the trend lines for the small proportion of cases of “Inadequate barrier” and “Other/Unknown.”



Comparison To Child Fatality Review Data

The Arizona Child Fatality Review Team (CFRT) is a separate program of ADHS that uses different data sources and criteria to evaluate the causes of the deaths of children. The data sources include the death certificate, hospital record, police report, and social service report. The CFRT has published their findings of drowning of young children, 1995-1999, and reported that only 4 of 81 drowning deaths of children less than 5 years of age occurred in backyard pools in which it was known that there was an adequate pool fence that had a properly functioning locked gate.⁵ This figure is markedly different than the proportion we attribute to lack of barrier or inadequate barrier as shown in **Figure 8**, where incidents are shown regardless of the outcome.

We wondered whether a comparable analysis of our data, looking specifically at the children who died, would yield similar findings. First, we obtained the death certificates of young children who died by drowning in a similar time period (1996-2002) and matched them to our incidence data to determine whether we had not received an incident report at all, or we had missed documenting the fatal outcomes. There were only six cases we had missed entirely,⁶ and seven cases where we had not documented from other sources that the incident case had an outcome of “death.”⁷ To relate the incidence data reported by fire departments to the mortality data from CFRT, we analyzed separately the 112 incidents occurring between 1996 and 2002 where the child’s outcome was “died (104) or impaired (8).” For additional comparison, we analyzed the category of 261 incidents where the outcome was “normal (142) or unknown (119).” The results are shown in **Figure 10**.

This approach revealed a notable finding for incidents that occurred during the warm months. The roles of supervision and barriers change dramatically depending on the outcome we are considering. The role of barriers (absent or failed) for cases whose outcome is “death or impaired” markedly differs compared to those cases whose outcome is “normal or unknown”. Barriers are a significantly more important factor in cases where the child died or was impaired than is supervision.⁸ On the other hand, supervision is the predominant factor in warm month

⁵ Rimza ME, Schackner RA, Bowen KA, Marshall W. Can Child Deaths Be Prevented? The Arizona Child Fatality Review Program Experience. Pediatrics. 2002; 110(1). www.pediatrics.org/cgi/content/full/110/1/e11

⁶ We did not add these cases to the data base used in this report.

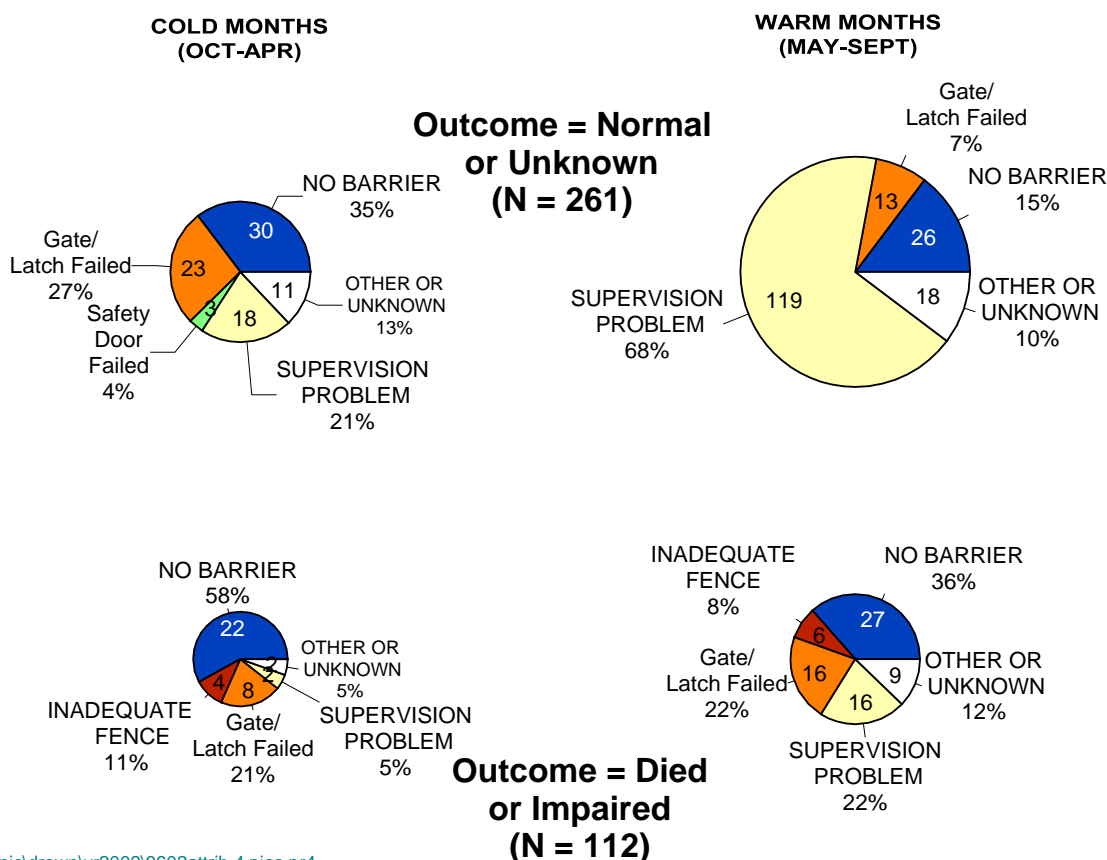
⁷ We updated our database for the cases listed as “impaired” who had died at a later date.

⁸ $X^2=44.33$; $p<0.01$

		Warm Month Barrier Problem	
		Yes	No
Died or Impaired	Yes	39	137
	No	49	25

incidents in which the child survived with normal or unknown outcome. These findings are not apparent in **Figure 8** because it does not stratify the attributed cause according to the child's outcome. In cold months, **Figure 10** shows that a barrier is the major factor regardless of outcome. In conclusion, the data here support the findings of the CFRT regarding the role of inadequate barriers as a major factor that contributes to child drownings in swimming pools.

Figure 10. Comparison of the single attributed cause of incidents in pools, according to time of year (cold vs warm months) and outcome of the child (normal and unknown vs. died and impaired). This figure analyzes cases occurring in 1996-2002. Data are derived from reports submitted by fire departments in Maricopa County.



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DEATH CERTIFICATE DATA

Using death certificates as an independent data source, **Figure 11** shows the drowning death rate for children under five years of age.⁹ The decline in the death rate

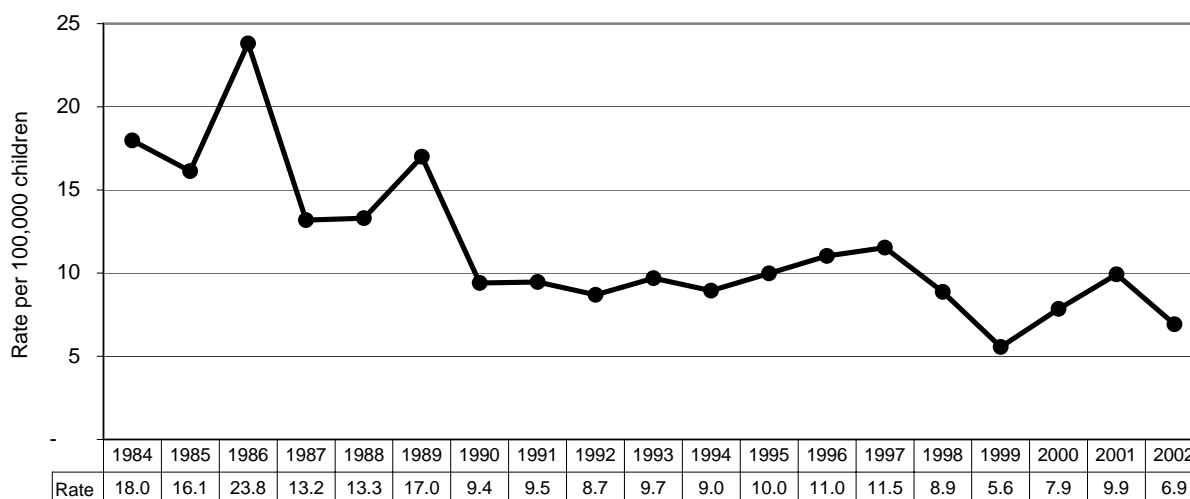
⁹ To calculate this rate, the numerator includes Arizona residents and non-residents, age 0-4 years old, whose incident occurred in Maricopa County. The denominator, however, is the Maricopa County population of children

looks generally similar to the decline in the rate of pool incidents reported by the fire departments shown previously in **Figure 3**.

An advantage of presenting this graph is that drowning deaths of Maricopa County residents that occur in another county are not included here. Furthermore, in death certificate data, the outcome is known. Conversely, in the incident reports submitted by the fire departments, the final outcome of the incident is sometimes unknown. However, a limitation of using death certificate data to describe the drowning rate is that a death in a given year may reflect a near-drowning incident that occurred in a previous year or in another county. Another limitation is the fact that these rates consider events that occurred in any body of water (pool, bucket, bathtub, lake, etc.), not just pools.

In 2002, the drowning rate decreased slightly to 6.9 deaths per 100,000 children.¹⁰ This was the second lowest drowning rate since 1984. As a reference point, the goal of *Healthy Arizona 2010* is to reduce drowning fatalities to 0.9 deaths per 100,000 young children.

Figure 11. Drowning death rate for children, 0-4 years of age, where the occurrence of the death is in Maricopa County in any body of water. [Data Source: ADHS, Vital Statistics, death certificates coded with underlying cause of death as E830, E832, or E910 (prior to 2000), or W65-W74, V90-V92, or Y21 (year 2000 and later)].



0-4 years old. We chose this unconventional method for calculating the rate because we occasionally encounter nonresident cases. The Drowning Prevention Coalition is focused on reducing the incidents regardless of whether the child is a county resident or a visitor.

¹⁰ U.S. Department of Health and Human Services. *Healthy People 2010*, 2nd ed., Volume 2. Injury Prevention, Section 15-29: Reduce Drownings, page 15-40. U.S. Government Printing Office, November 2000.

DISCUSSION

While 55 incidents involving young children occurred in swimming pools, there were 11 incidents in other bodies of water. Of special concern were the seven bathtub-related incidents that occurred in 2002. Supervisors must remain constantly vigilant to the hazard of drowning anytime a young child is near water or has access to water.

A partial solution to control pool drowning is the placement of barriers around pools. The findings in this report have indicated that the largest number of incidents occurs at home, in the family pool. Arizona law (A.R.S. § 36-1681) requires that all homes with a child under six years of age and that have a pool, must have a barrier between the house and the pool. This law applies to pools built after June 1, 1991. However, local jurisdictions can pass laws that preempt this State law. The State law specifies that fences, motorized safety pool covers, or self-latching doors leading to the pool may be used as a barrier. The law specifies these barriers in term of height, openings, and gate latches capable of preventing entry by small children. Barriers would appear to be most effective in reducing incidents occurring in cold months, but also might reduce incidents, and especially deaths, occurring in warm months.

This report's new analysis of attributable cause of pool incidents according to outcome substantially agrees with the findings of the Arizona Child Fatality Review Program – barriers appear to play a crucial role in preventing most drowning deaths in pools.

Lastly, the benefits of many drowning prevention measures are unknown. There is little data on the role of swimming lessons in preventing childhood drowning. Other educational efforts, such as mass media campaigns, have not been evaluated for their impact. Likewise, the role of advice from pediatricians, family members, and friends is a potentially untapped source of intervention education. Strategic knowledge of how best to utilize these avenues could help health educators prevent drowning in our community.

APPENDIX

**REPORT OF DROWNING OR
NEAR-DROWNING IN ARIZONA -- 2002**

DATE OF INCIDENT
(MM/DD/YR)

HOUR
(24:00)

AGE
(yrs)

SEX

INCIDENT #

PLAT # or ZIPCODE:

Fire Dept.

(Reporting agency)

CITY OF INCIDENT:

- ☐ Chandler ☐ Mesa ☐ Rural area
☐ Gilbert ☐ Peoria ☐ Scottsdale
☐ Glendale ☐ Phoenix ☐ Tempe
☐ Other: _____

HISPANIC: ☐ Yes ☐ No ☐ Unk.

RACE: ☐ White ☐ Amer. Indian
☐ Black ☐ Unknown
☐ Other: _____

WATER TYPE:

- ☐ Pool--in ground ☐ Spa
☐ Pool--above ground ☐ Bathtub
☐ Canal or Irrig. Ditch ☐ Toilet
☐ Other: _____

SITE OF INCIDENT: (at whose home?)

- ☐ Victim's Home ☐ Neighbor's "
☐ Relative's " ☐ Friend's "
☐ Other: _____

TYPE OF DWELLING:

- ☐ Single Home ☐ Apt/Condo
☐ Hotel/Motel ☐ Other: _____

ATTIRE OF VICTIM: ☐ Swimwear
☐ None ☐ Other Clothes

**ACTIVITY AND LOCATION OF VICTIM
IMMEDIATELY PRIOR TO INCIDENT:**

SUPERVISOR(s) AT TIME OF INCIDENT:

- ☐ Mother ☐ Father ☐ N/A
☐ Other (Specify) _____
Age of this person _____

**ACTIVITY AND LOCATION OF SUPERVISOR
IMMEDIATELY PRIOR TO INCIDENT:**

STATUS OF VICTIM WHEN FOUND IN WATER:

- ☐ Submerged ☐ Floating
☐ Struggling ☐ Unknown
☐ Other: _____

**RESPIRATORY EFFORT WHEN PULLED
FROM WATER:**

- ☐ Present ☐ Absent

ESTIM. DURATION OF ANOXIA: _____

**DID RESCUER/ BYSTANDER(S) PERFORM
CPR?**

- ☐ Yes ☐ No ☐ Unknown
Done right? Comment: _____

**LENGTH OF RESIDENCE AT THIS HOUSE (if
applicable)?** _____

IS THERE A FENCE OR BARRIER?

- ☐ Yes ☐ No ☐ Unknown

Describe: _____

METHOD OF ACCESS TO POOL OR SPA:

- ☐ Supervisor allowed child into pool or deck area
☐ No barrier -- child wandered in
☐ Climbed (specify): _____
☐ Child entered unsecured gate
☐ Child entered secured gate
☐ Other: _____

**WOULD AN INNER FENCE AROUND THE POOL
HAVE PREVENTED THIS INCIDENT?**

- ☐ Yes ☐ No
☐ Unknown ☐ N/A

DISPOSITION:

- ☐ DOA ☐ Died in E.R.
☐ Treated As Outpatient
☐ Admit to: _____

FOLLOW-UP: (Date pt was last seen)

- ☐ Died _____ / _____ / _____
☐ No Impairment _____ / _____ / _____
☐ Impairment _____ / _____ / _____

DESCRIBE THE APPARENT CIRCUMSTANCES (how/why it happened; how child was found & revived): _____ (Initials) _____

(Today's Date)